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[Effects of the implementation of T90 extension and 52 mm square mesh codend on the bottom trawl hake fishery of the north western Mediterranean](#)

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Abstract: The Spanish bottom trawl fleet operating in the Mediterranean currently uses 40mm square mesh codends. Its selectivity is still too low to overcome the overall problem of high proportions of immature specimens in the catches. Even for some target species such as the European hake (*Merluccius merluccius*), there are high proportions of individuals smaller than the minimum conservation reference size (MCRS). The aim of the present work is to assess the selectivity of three different configurations of the traditional net (TRA) used in the bottom trawl hake fishery off the northwest Iberian Peninsula, each including the following modifications: i) an extension piece made of 90° turned diamond mesh (T90), ii) a 52 mm square meshed codend (52S), and iii) both modifications combined (EXP). The experimental fishing survey applied two methodologies: alternate hauls to compare the different net configurations; and the covered codend method to calculate the selectivity parameters of 52mm square meshed codend for the main commercial species. Catch comparisons showed no discard reduction using the T90 extension piece for any of the species analysed, nor any selectivity improvement. Conversely, the 52 mm square meshed codend showed a clear discard reduction for *M. merluccius* and a generalized improvement of selectivity for most commercial species. This improvement raised the 50% retention length (L50) for

M. merluccius

to 22.2 cm, well above its MCRS (20 cm), allowing to escape 90% of the undersized individuals. However, the implementation of the 52 mm square meshed codend would involve important economic losses for main target species, like

M. merluccius

and

Mullus barbatus

, representing up to 32 and 28% of the incomes, respectively. Considering all analysed species, economic losses using the 52 mm square meshed codend would represent 27% of the incomes obtained using the current 40 mm square meshed codend in force. Despite it, transition analyses showed that the yield per recruit of the main target species would recover after two years, and even increase up to 30% and 17% for

M. merluccius

and

M. barbatus

, respectively, after the fourth year of the implementation of the 52 mm square meshed codend.

Keywords: selectivity, European hake, red mullet, T90 extension, 52 mm square meshed codend, western Mediterranean, bottom trawling